

# [High $f_T$ and $f_{max}$ Bipolar Transistor and Method of Making Same]

## Abstract

A high  $f_T$  and  $f_{max}$  bipolar transistor (100) includes an emitter (104), a base (120), and a collector (116). The emitter has a lower portion (108) and an upper portion (112) that extends beyond the lower portion. The base includes an intrinsic base (14) and an extrinsic base (144). The intrinsic base is located between the lower portion of the emitter and the collector. The extrinsic base extends from the lower portion of the emitter beyond the upper portion of the emitter and includes a continuous conductor (148) that extends from underneath the upper portion of the emitter and out from underneath the upper portion of the emitter. The continuous conductor provides a low electrical resistance path from a base contact (not shown) to the intrinsic base. The transistor may include a second conductor (152) that does not extend underneath the upper portion of the emitter, but which further reduces the electrical resistance through the extrinsic base.